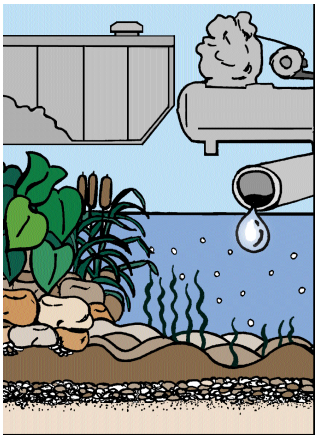
Lagoons

Construction And Maintenance



What is a lagoon system?

A lagoon system — also called an oxidation pond — is basically a large "holding tank" for treatment of wastewater. Lagoons are widely used for the treatment of municipal wastewater. Lagoons can also be used for individual wastewater systems on lots that have enough available space, especially where soil or site conditions prevent the use of any underground absorption system.
The general application is usually in rural areas.

A septic tank should always be used before the lagoon. The septic tank will provide the primary treatment of the wastewater and prevent the lagoon from filling with solids. To have a septic tank pumped is much simpler than to attempt to pump out a lagoon.

Once the wastewater from the septic tank is in the lagoon, the natural bacteria and algae present work together to break down the harmful components of the wastewater.

The discharge from lagoons must be chlorinated before it's released. When calculating Mississippi's average rainfall and evaporation rates, the state has a "zero net evaporation potential," which means that very little — if any — of the water in the lagoon will evaporate into the atmosphere and lower the water level.

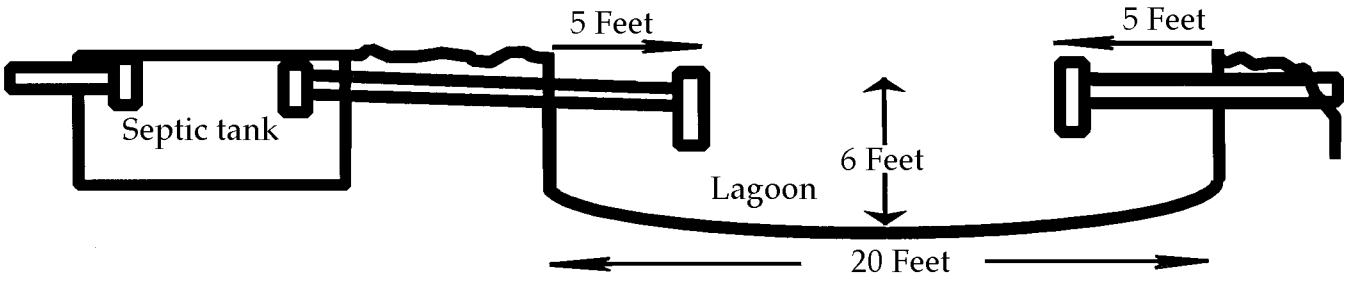
Consequently, lagoons are considered to have a discharge, at least in certain times of the year, and the discharge must be chlorinated before it's released. The discharge must also be maintained on the property of the generator, which makes small parcels of property generally unsuitable for lagoons.

Where can you locate a lagoon system?

Lagoons should be placed at least 100 feet from any well, source of potable water, or recreational water. Also, any dwellings or property lines shall be at least 50 feet from the lagoon. The 100 and 50-foot measurements should be made from the edges of the lagoon, not the middle.

What are some of the construction specifications for a lagoon?

Any lagoon constructed in soil textures of sand, loamy sand, sandy loam, loam, or silt loam should be lined with a continuous 20-mil liner or suitable clay liner a minimum of six inches thick.



This liner will prevent the infiltration of wastewater from the lagoon into groundwater sources or seasonal water tables.

Lagoons can use vertical or sloping sides. The following information applies for a three-bedroom home or smaller; for each additional bedroom over three, the homeowner should add an additional 140 square feet of surface area in the lagoon.

1) *Vertical sides:* surface area of at least 400 ft^2, usually 20 ft X 20 ft
2) *Sloping sides:* surface area of at least 625 ft^2, usually 25 ft X 25 ft.
   Lagoons with sloping earth sides need a 1:1 slope, or about a 45 degree angle.

The average liquid depth in all lagoons should be four to five feet.

Lagoons having vertical sides should have the sides constructed of cypress, treated timbers, concrete blocks, or concrete. They should be constructed to provide a permanent structure and prevent sides from sloughing or caving in.

The inlet and outlet pipes from the lagoon should be at least four inches in diameter and placed at a minimum slope of two inches per 100 feet. The inlet should extend five feet horizontally into the lagoon and be directed downward at least one-and-a-half to two feet. The invert of the lagoon inlet pipe should be at least two inches lower than the invert of the septic tank outlet pipe. This is to ensure that the wastewater will flow into the lagoon from the septic tank.

The lagoon should be enclosed by a fence to prevent children, livestock or pets from entering. An open type fence (woven wire) should be used to allow free access for sunlight and air movement. Sunlight and air movement are necessary for the proper treatment of wastewater in lagoons.

Start-up of a lagoon requires filling with at least two feet of fresh water to prevent plant growth and odors. At least two feet of water should be maintained in the lagoon, and vegetation should be trimmed on the berm and near the water's edge as needed.

Where can I get more information about a lagoon system?

For more information about lagoon systems and their suitability for your home, contact your county public health environmentalist. For specific design standards, consult the Mississippi State Department Of Health Design Standards for IOWDS.

MISSISSIPPI STATE DEPARTMENT OF HEALTH

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